

CLAIMS

1. (Previously Presented) A method for detecting an alignment of a document having a side edge in an automatic document feeder, the automatic document feeder included in an optical scanner having a scanning window, the method comprising:

actuating the automatic document feeder to feed in the document to a first position, wherein a portion of the side edge of the document in the first position is defined by the scanning window and a colored pattern layer in the scanning window;

capturing a first image of the document while the document is in said first position;

feeding the document a feeding length that is less than a total length of the document to a second position;

capturing a second image of the document while said document is in said second position; and

calculating a slant value by comparing the first image with the second image.

2. (Currently amended) The method of claim 1, wherein ~~the~~ a color of the colored pattern layer is different from that of the document.

3. (Currently amended) The method of claim 1, wherein the side edge is substantially parallel to ~~the~~ a feeding direction of the document.

4. (Previously Presented) The method of claim 1, wherein a first distance comprises a distance from the side edge to a reference point positioned in the colored pattern layer.

5. (Previously Presented) The method automatic document feeder of claim 4, wherein a second distance comprises a distance from the side edge to the reference point after the document is fed the feeding length to the second position.

6. (Previously Presented) The method of claim 4, wherein the reference point is positioned on a scan line of the scanning window.

7. (Currently amended) The method of claim 5, wherein the slant value comprises a ratio of the a difference value of the first distance and the second distance to the feeding length, wherein the feeding length further comprises a length sufficient to enable measuring of a slant value.

8. (Previously Presented) The method of claim 7, wherein the slant value is calculated by an electronic calculation device.

9. (Previously Presented) The method of claim 8, wherein the electronic calculation device comprises a software calculation program.

10. (Previously Presented) The method of claim 8, wherein the electronic calculation device further comprises a calculator in a computer.

11. (Previously Presented) The method of claim 1, and further comprising comparing the slant value with a preset value.

12. (Previously Presented) The method of claim 11, wherein the preset value comprises a value that is tested and provided for the document.

13. (Previously Presented) The method of claim 11, and further comprising scanning the document in response to the slant value being smaller than the preset value.

14. (Previously Presented) The method of claim 11, and further comprising terminating scanning in response to the slant value being larger than the preset value.

15. (Previously Presented) The method of claim 14, and further comprising taking the document out of the document feeder, and repeating said actuating the automatic document feeder, said capturing the first image of the document, said feeding the document the feeding

length to the second position, said capturing the second image of the document, and said calculating the slant value by comparing the first image with the second image.

16. (Previously Presented) The method of claim 15, wherein said taking the document out of the document feeder further comprises manually taking the document out of the document feeder.

17. (Previously Presented) The method of claim 13, and further comprising setting off an alarm in response to the slant value being larger than the preset value.

18. (Previously Presented) A method comprising:
actuating a document feeder in an optical scanner to place a document in a first position;
capturing a first image while said document is in said first position;
actuating the document feeder to feed the document into the optical scanner an appropriate length that is less than a total length of the document, to place said document in a second position;
capturing a second image while said document is in said second position; and
determining a slant value based, at least in part, on a comparison of the first image with the second image.

19. (Previously Presented) The method of claim 18, and further comprising arranging a colored pattern in or near a scanning window of the optical scanner.

20. (Currently amended) The method of claim 19, wherein ~~the~~ a color of the colored pattern is different from that of the document.

21. (Previously Presented) The method of claim 20, and further comprising positioning a first edge of the document between the scanning window and the colored pattern.

22. (Previously Presented) The method of claim 21, and further comprising measuring a first distance between the first edge and a reference point positioned in the colored pattern.

23. (Previously Presented) The method of claim 22, and further comprising measuring a second distance between the first edge and the reference point positioned in the colored pattern.

24. (Previously Presented) The method of claim 23, wherein the reference point is positioned on a scan line of the scanning window.

25. (Previously Presented) The method of claim 23, and further comprising determining the slant value based, at least in part, on a ratio of a difference between the first distance and the second distance to the appropriate length.

26. (Previously Presented) The method of claim 25 wherein the appropriate length comprises a length sufficient to determine the slant value.

27. (Previously Presented) The method of claim 18, wherein the slant value is calculated by an electronic calculation device.

28. (Previously Presented) The method of claim 27, wherein the electronic calculation device further comprises a software calculation program.

29. (Previously Presented) The method of claim 27, wherein the electronic calculation device comprises a calculator in a computer.

30. (Previously Presented) The method of claim 18, and further comprising comparing the slant value with a preset value.

31. (Previously Presented) The method of claim 30, wherein the preset value comprises a value that is tested and provided for the document.

32. (Previously Presented) The method of claim 30, and further comprising continuously scanning in response to the slant value being smaller than the preset value.

33. (Previously Presented) The method of claim 30, and further comprising terminating a scanning operation in response to the slant value being larger than the preset value.

34. (Previously Presented) The method of claim 33, and further comprising repositioning the document.

35. (Previously Presented) The method of claim 33, and further comprising setting off an alarm in response to the slant value exceeding the preset value.

36. (Currently amended) The method of claim 18, wherein said actuating a document feeder in an optical scanner to place a document in a first position comprises automatically actuating the document feeder.

37. (Currently amended) The method of claim 18, wherein said actuating the document feeder to feed the document into the optical scanner an appropriate length to place the document in a second position comprises automatically actuating the document feeder.

38. (Previously Presented) An optical scanning device, comprising:
a document feeder adapted to place a document in a first position, wherein the optical scanning device is adapted to capture a first image while the document is in the first position, the document feeder is further adapted to feed the document into the optical scanner a feeding length to place the document in a second position, wherein the feeding length is less than a total length of the document, and wherein the optical scanning device is further adapted to capture a second image while the document is in the second position, and further wherein the optical scanning

device is adapted to determine a slant value based, at least in part, on a comparison of the first image with the second image.

39. (Previously Presented) The optical scanning device of claim 38, wherein the document feeder comprises a colored pattern positioned in an area corresponding to a scanning window of the optical scanner.

40. (Currently amended) The optical scanning device of claim 39, wherein ~~the~~ a color of the colored pattern is different from that of the document.

41. (Previously Presented) The optical scanning device of claim 40, wherein the document feeder is adapted to position a first edge of the document between the scanning window and the colored pattern.

42. (Previously Presented) The optical scanning device of claim 41, wherein the optical scanning device is adapted to measure a first distance between the first edge and a reference point positioned in the colored pattern.

43. (Previously Presented) The optical scanning device of claim 42, wherein the optical scanning device is further adapted to measure a second distance between the first edge and the reference point positioned in the colored pattern.

44. (Previously Presented) The optical scanning device of claim 43, wherein the reference point is positioned on a scan line of the scanning window.

45. (Previously Presented) The optical scanning device of claim 44, wherein the optical scanning device is further adapted to determine the slant value based, at least in part, on a ratio of a difference between the first distance and the second distance to the feeding length.

46. (Previously Presented) The optical scanning device of claim 45, wherein the feeding length comprises a length sufficient to determine the slant value.

47. (Previously Presented) The optical scanning device of claim 38, further comprising an electronic calculation device adapted to calculate the slant value.

48. (Previously Presented) The optical scanning device of claim 47, wherein the electronic calculation device further comprises a software calculation program.

49. (Previously Presented) The optical scanning device of claim 47, wherein the electronic calculation device comprises a calculator in a computer.

50. (Previously Presented) The optical scanning device of claim 38, wherein the optical scanning device is further adapted to compare the slant value with a preset value.

51. (Previously Presented) The optical scanning device of claim 50, wherein the preset value comprises a value that is tested and provided for the document.

52. (Previously Presented) The optical scanning device of claim 50, wherein the optical scanning device is adapted to continuously scan in response to the slant value being smaller than the preset value.

53. (Previously Presented) The optical scanning device of claim 50, wherein the optical scanning device is adapted to terminate a scanning operation in response to the slant value being larger than the preset value.

54. (Previously Presented) The optical scanning device of claim 53, wherein the optical scanning device is further adapted to set off an alarm in response to the slant value exceeding the preset value.

55. (Previously Presented) The optical scanning device of claim 38, wherein the document feeder comprises an automatic document feeder.